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ABSTRACT

Data obtained in a 1977 survey of 10 percent of the secondary school principals in the United States were subjected to statistical regression analysis to determine the relative effects of two types of school centralization. "Fragmentary" centralization involves the imposition of central control over specified facets of education in a number of settings, as is the case, for example, in federal categorical programs. "Integrative" centralization, implemented only at the state level, places all aspects of schools' and districts' educational functions under one central hierarchy. The analysis revealed that, as hypothesized on the basis of organizational theory, fragmentary centralization is accompanied by expansion of the administrative and macrotechnical (curricular program) structures of local schools. Integrative centralization, on the other hand, encourages simplification of these structures. This report discusses the theoretical background, hypothesis development, research strategy, data analysis, results, and conclusions of the study. The limitations of the original data are discussed in the report. An appendix presents the items included in the original questionnaire. (Author/PGD)

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THE EFFECTS OF STATE CENTRALIZATION ON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE IN CONTEMPORARY SECONDARY SCHOOLS

A DISSERTATION

SUBMITTED TO THE DEPARTMENT OF SOCIOLOGY

AND THE COMMITTEE ON GRADUATE STUDIES

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DOCTOR OF PHILOSOPHY

By

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THE EFFECTS OF STATE CENTRALIZATION ON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE IN CONTEMPORARY SECONDARY SCHOOLS

Elizabeth Ann Stackhouse, Ph.D.

Stanford University, 1982

Contemporary American schools are not organized within an integrated, national education system. On the contrary, funds and other forms of support originate from a variety of sources. Similarly, control over schools is fragmented. Much of the limited control and influence over schools at state and Federal levels is organized around a set of institutionalized categories and definitions. Vertical integration, to ensure the dissemination and enforcement of potential national educational policies and procedures is largely lacking. Integrative centralization has been a strategy only of the individual states, followed in a piecemeal fashion.

The impact of both fragmentary and integrative centralization on the structure of local schools is examined using data from a nationwide survey of public secondary school principals. Measures of fragmentary and integrative centralization by the individual states include both financial and regulatory aspects.

Fragmentary centralization is found to be accompanied by an expansion of the administrative and macrotechnical structures of local schools. These features act as signals of compliance by the school to environmental categories and definitions. Integrative centralization, on the other hand, does not seem to

be accompanied by such an expansion. Rather, some slight simplification of these structural features is found to result from integrative centralization.

The conclusion is made that centralization is not a unitary process. The manner in which states increase their control over local schools has important consequences in the structural responses made by those schools.

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CHAPTER I

INTRODUCTION AND OVERVIEW

Scope and Focus

The sociologist who chooses to examine schools as examples of organizations faces a dilemma. The history of schooling in the United States records the development of a particularly successful institution. Public schools are historically well-funded, publically-respected and very durable organizations, yet there are enivronmental demands which they do not seem to be satisfying (J. Meyer 1977). The literature abounds with anecdotal complaints and studies by funding agencies of failed or partially unimplemented innovations (Baldridge and Deal 1975). This apparent paradox is all the more puzzling for a sociologist because of the popularly-accepted theoretical assertion that the likelihood that an organization will survive derives from the manner in which it manages environmental demands, particularly demands from those upon whom it is dependent for resources (Eisenstadt 1969; Aldrich and Pfeffer 1976; Pfeffer and Salancik 1978).

We are concerned here with investigating the impact that resource-acquisition and environmental demands have on the form and structure of a school. In other words, the focus of this inquiry is to ask how environmental patterns have impressed themselves upon these organizations rather than addressing the

issue of arranging structure to maximize output with a given set of resources.

Observations on Schooling in the United States

The foundation for this inquiry rests on the observation that on a national scale the organizational pattern of American schools is rather peculiar, both historically and comparatively. An extensive educational system arose early in this country, with the establishment of many local schools rather than the creation of a national policy mandating a centralized school system. This is a very important characteristic which is reflected in the way schooling is organized in this country.

There is still only limited national control over schools. The influence which exists at the Federal level is organized around a specific set of limited categories, and does not represent an attempt to establish a vertical hierarchy to define and control all activities and goals in each local school. Rather, the Federal government has defined certain situations, typically the presence of students with specified characteristics, in which aid is warranted and therefore increased control by the State is justified.

The authority of the individual states over local schools is less recent and only partially categorical. Additionally, most states specify particular structural characteristics a school must have such as class offerings, physical facilities and personnel, to be a legitimate accredited school. That is, the states attempt to bureaucratically control some characteristics of their schools, but only a limited range of

features.

Consider that an integrated, centralized national system of schooling, like many systems around the world, would be organized around the coordination of work and the enforcement of system-wide mandates and policies. Administrators at each level in the chain-of-command would be linked by a set of authority relations to those whom they supervise and those who supervise them. A system of fragmented centralization, like the contemporary American system would, by contrast, be expected to produce a politically oriented rather than supervisorial administrative component. That is, a variety of highly specialized administrative personnel, each of whom would be expert in a particular categorical focus. We shall investigate these two different forms which centralization can take. There is first the categorically-oriented fragmentray centralization exemplified by the spectrum of Federal categorical programs in this country. Second, there is vertical integration into a system governed by an increasingly clear-cut hierarchy into which the bureaucratic controls by the states and by other nation states fall, which we call integrative centralization.

Theoretical Overview

Our primary thesis is that centralization of control over education can be primarily either integrative or fragmentary and categorical and that these two strategies will produce very different effects on local schools. Specifically, fragmentary centralization, unlike integrative centralization, will affect

schools as would increased levels of other forms of environmental complexity.

What sorts of effects is environmental complexity thought to have? In the following section we first survey the extensive literature by organizations theorists which might shed light on the expected relationship between an organization and its environment. Then a theoretical discussion of our independent and dependent variables is presented. Consistent predictions that administrative expansion and elaboration will accompany environmental complexity are found. However the often implicit assumption made by one set of organizational theorists is that this administrative elaboration is necessarily control-oriented. Structural elaboration is seen as a means through which internal rationality is achieved. Other writers expect parallel findings as far as formal, structural features are concerned, but remind one that schools are not organized around integration and supervision of classroom teaching. They suggest, therefore, that structural features might serve more to assure legitimation for the organization by signaling its conformity to environmental mandates than to control such work activities.

We proceed to explicate the concept of the institutional environment, and then tie observations about the contemporary institutional environment of American schools to the theoretical discussion. Next follows a discussion of the dependent variables and clarification of the expected relationships among them. Our treatment of these structural features is somewhat unorthodox, and thus deserves mention at this point. Conventional wisdom

asserts that environmental factors affect structure, but lays stress on the effects of those environmental factors which impinge on the production process and also on technical requirements as causal factors. Partly because available research suggests that the causal process is much more complex, we assert that the observed correlations between structure and technology at the administrative level are primarily the result of the influence of their common institutional environment on both. This position is especially sound in organizations like schools which are organized around institutionalized definitions and issues. The macro-technical structure of schools, by which we mean the different classes and alternatives to classes which are used to certify a student as a graduate, is an additional feature of the school which is responsive to the institutional environment in much the same fashion as the school administrative structure. These are two formal, structural arenas which can be used to display adjustments signalling the intentions of the school to incorporate environmental mandates.

After the dependent variables have been addressed, we discuss the operational indicators of state fragmentary and integrative centralization. The third chapter ends with a presentation of the operational hypotheses.

Research Strategy

We shall investigate these issues with a secondary analysis of a large set of data from questionnaires answered by over ten percent of public secondary school principals in the United States. This survey was conducted by the National

Institute of Education in the Spring of 1977 concerning the 1976-77 school year. There are both advantages and disadvantages to the use of this data set. We are somewhat hampered because the instrument was designed primarily to survey the programatic offerings of schools throughout the country. Questions about a number of organizational features were also included, but not in a comprehensive fashion. Still, sufficient data is available to permit a preliminary analysis of these issues in schools throughout the country. So we have the advantage of studying the effects of centralization on a very large number of schools in a wide variety of locations and situations.

Our research strategy is to conduct a fine-grained analysis using a variety of indicators for each organizational variable, when this is possible (Weick 1976). This design allows us to examine the effects on each of the different indicators and look for evidence of consistent effects, thus providing an added measure of assurance that the variables used and therefore the results presented are reliable. The basic statistical procedure involves a series of regression equations including a number of essential control variables, which are described in Chapter IV.

CHAPTER II

THEORIES APPLICABLE TO THE RELATIONSHIP BETWEEN SCHOOLS AND THEIR ENVIRONMENTS

Open Systems Explanations

A sociologist attempting to explain how environmental complexity shapes the form and structure of schools can turn to organizations theory. There are several fairly well-developed theoretical perspectives which have dealt with environmental effects on organizations. The largest general category of these explanations is the open systems perspective, which has evolved greatly in the last few years through attempts to integrate this view with earlier work.

Thompson (1967) for example, suggests that the most useful variety of organizations theory to explain a particular phenomenon depends upon the level of organization which is being investigated. Lawrence and Lorsch (1967) portray the different approaches in organizations theory as developing to characterize different types of organizations which tend to be located in differing environments. Emery and Trist (1965) suggest that differences among organizational types represent development, that is increased complexity, over time which in turn reflects a trend toward increasing environmental complexity.

These approaches have in common the suggestion that environmental factors play a major role in shaping the structure

of organizations. The assertions of contingency theory, as summarized by Lawrence and Lorsch (1967) are that there is no one best way to organize, although all such strategies are not equally effective. The best approach for a particular organization to take depends upon the environment to which it must relate. Specifically, an organization located in a complex or turbulent environment will have a larger and more complex administrative structure (cf., Emery and Trist 1965; Terreberry 1968; Udy 1970; Galbraith 1973).

However, the facets of the environment which contingency theorists represent as affecting organizational structure are those features which impinge directly upon the technology. These theorists view structure as a means to achieve rationality in an organization through the control, that is to say the management, of the technical process. This is not an appropriate assumption to make when considering contemporary American schools, however; schools are not organized primarily around the control and integration of the work of teaching. So we do not expect the relationship between organization and environment to be quite so straightforward as this cursory examination of the literature might suggest.

The argument is refined somewhat by resource dependence theorists to distinguish between two processes through which the form of organizations within a particular environment might be brought into agreement with the requirements of that environment (Aldrich and Pfeffer 1976). First, the selection process depicts organizations as arising and developing

structures more or less randomly, with inappropriate adaptations disappearing (being selected out) over time (cf., Freeman and Hannan 1975; 1977). A second approach espoused by the resource dependence theorists stresses adaptive processes through which existing organizations change in response to specific sorts of stimuli from their environments. They see the primary stimulus for change as originating with those publics upon whom the organization is dependent for resources (Aldrich and Pfeffer 1976; Pfeffer 1978; Pfeffer and Salancik 1978; Aldrich 1979).

However, despite their comprehensive discussion of the change process itself, these theorists do not explore as thoroughly the texture of the relationship between an organization and the environmental forces which shape it. The basic causal process described by the resource dependence perspective, in which specific concrete environmental demands produce structural adaptations by organizations within that environment, implicitly portrays the environment as a matrix of overarching organizations. Yet environmental contingents and the constraints which they impose upon organizations can be much more amorphous. Cultural patterns, for example, affect organizations through general societal norms and values (which can be, in turn, embedded in concrete, specific legal requirements and tax regulations). Societal definitions of what is and what can be an organization vary, as do role expectations for the participants in organizations (Weber 1946; Ouchi and Jaeger 1978; Scott 1981).

The Institutional Approach

The Concept of Institutional Environment

Meyer and Rowan (J. Meyer and Rowan 1977;1978; J. Meyer 1977; 1979) describe the general process which is at work in shaping the structure of schools in much this way. They argue that a critical facet of the environment of schools is just such a set of definitions and role expectations. These institutions are seen to delineate the range of legitimate categories of actors and actions within schools. Resources, both in terms of financial support and legitimation and recognition are secured when a school conforms to the institutionalized categories. Furthermore, these definitions are not static. Definitions of the characteristics of a "proper" school have changed, and for the most part expanded over time (Tyack 1974; Rowan 1977). So a school must be especially attuned to political changes and to concerns which arise within its environment, and must continually monitor its own conformation to environmental categories.

This point of view produces propositions which follow the same general trend as that predicted by contingency theory, that environmental complexity will be accompanied by structural elaboration, yet it focuses on important subtleties in defining those elements in the environment which will be relevant for the school. It is not a matter of environmental exigencies impinging on the technical process. Rather it is thought that over time the structural features of a school will mirror or become isomorphic with (Scott 1981) the categorical schemes which prevail in their environments. For this inquiry then the

relevant forces in the environment of a school include those institutions and organizations that provide it with resources and represent influences constraining its behavior either directly or indirectly.

The Institutional Environment of American Education

The history of schooling in America is unique in several regards. Historically, schools were community-based. There was a Federal political system, but in the area of public education it was especially weak. Indeed, the early history of schooling in the United States resembles a series of strictly localized social movements, a pattern unlike the origins of centralized educational systems in most modern nation states (Tyack 1974; J. Meyer et. al. 1975; 1977; J. Meyer 1979). The definition of education as a legitimate concern of the individual states and the Federal government began primarily at the state level in the late Nineteenth Century, long after public schooling had begun to flourish at the local level in this country, with the consolidation of local schools in what was called the School Reform Movement. This activity was concommitant with economic modernization and the accompanying consolidation of state and Federal power in a variety of arenas, that is nation-building (Bailyn 1960; J. Meyer et. al. 1979).

There are considerable variations among the individual states in the extent to which this process has progressed both over time and at any one time. We investigate some effects of centralization by comparing some characteristics of the

individual states and of secondary schools within them as they appeared in 1977. The first step in such an investigation is to ask where resources and authority are located, in other words to examine the institutional environment. We find that funding and legitimation derive from a variety of sources and that control over schools is likewise fragmented.

Local educational personnel and authorities still have considerable authority over and practical impact upon both goals and means in local schools. Furthermore, there are abundant lateral relations at each level in the educational hierarchy. For example, teachers, principals and superintendents each deal directly with and feel responsible to parents and community members as well as their organizational superiors and those whom they supervise. Much of the authority for local schools resides with the local community as it has historically. However there are qualitative changes. Power is consolidating in the hands of those who can mobilize to become an active, recognizable political constituency, because the institutional environment of schools is organized around an increasingly elaborate categorical scheme incorporating such groups as additional constituents (Corwin 1965; J. Meyer 1979).

Local schools are often nominally dependent segments of a local school district organization. However, not all of the contacts a school has with environmental forces are buffered through local district agencies. School administrators deal routinely with state-required forms. Furthermore, individual schools may have direct ties to and experience with the state

educational agency in connection with state categorical programs or with Federal programs which are administered by the state. And not every school in a particular district is the recipient of such aid. Some schools have categorical funding from a wide variety of programs while others have little or none (Abramowitz and Tenenbaum 1978).

There is still very little centralized federal authority over education. Most of the influence from this quarter is indirect (Kirst 1976). More importantly, recent emphasis has been on creating narrowly focused programs of categorical aid which are change-oriented (Berke and Kirst 1972). So the influence which exists at the Federal level is organized around a limited and highly specific scheme and not around an attempt to vertically integrate, that is to specify and control through a clear-cut hierarchy the goals and activities in each local school. There is a range of student characteristics like physical and educational disadvantages, a vocational orientation and poverty which have been specified by the federal government as warranting aid and therefore influence on its part. But there has not been, for example a mandate for a standardized national curriculum or a cadre of inspectors to enforce the same.

The authority exercised by the states is less recent and more varied qualitatively. Some of the control exercised by the individual states is organized around the same categorical schema of student characteristics found at the Federal level. In fact some of the specialized Federal programs are administered through the state educational agencies; much of

the growth in state budgets and staffs is supported by the administrative allowance included in such programs (Kirst 1976).

On the other hand, there have been significant moves by states to initiate bureaucratic controls over local schools. Currently, the most highly centralized authority over educational goals and means resides with the individual states. Two very important means used by state governments to influence local schools developed around the turn of the century. These are first, official rules and definitions of educational programs and processes and second, direct state funding of local schools. It is important to note that these strategies are interrelated but are not synonymous (Wirt 1978; J. Meyer 1979) and that there are additional important avenues of influence.[1] Of course even these unified bureaucratic controls originated as attempts to organize a previously-existing, flourishing population of diverse, community-oriented schools.

Actually, it is somewhat misleading to describe a single pattern of control as typical of the states as a whole because there is considerable diversity among the states in this regard.

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[1] Attempts by both state and Federal agencies to mold local schools are not limited to direct regulation and financial support. Other modes of influence include attempts to shape the culture of educational ideas through speeches, publications, and the fundung and dissemination of research on specific topics (Tyack and Hansot 1979; J. Meyer 1979). A common strategy of the Office of Education through the 1950s was providing technical assistance and specialized consultants (Kirst 1976). Further, the judiciary has an important role, as do private groups and foundations (Clark 1965).

This diversity seems to vary systematically by region of the country, reflecting the differing histories of the various areas (Kirst 1976; Wirt 1978; Abramowitz and Tenenbaum 1978). The variety of roles included upon and the differing composition of state boards of education has been said to ". . . reflect the mosaic of American federalism with its underlying individualistic notions of how to govern" (Kirst 1976: 9). It is, by the way, this variation which permits us to study the effects of centralization with a relatively simple research design.

The fragmented nature of Federal and some state influence structures in combination with the extensive set of local authorities and influences which still exist for schools in the form of school districts, boards of education, parents and community members make the environments of American schools extremely complex. While a variety of environmental constituencies does not necessarily create complexity and conflict for an organization, there does not seem to be a natural coalition formed among the parties in the environments of schools (Pfeffer and Salancik 1978). The demands of the various agents and agencies to whom a school is accountable to do not tend to coincide.

One can imagine a system which is organized around a direct mandate for nationwide educational development, similar to many systems around the world, and speculate about the significant differences between such a system and the contemporary American case. An integrated, centralized system

would be organized around the coordination of work activity and the enforcement of system-wide mandates and policies, in a straightforward chain-of-command fashion. Administrators at each level in the hierarchy would have their own particular set of authority relationships and arenas which they control through inspection and evaluation. The environments of each hierarchical level would be circumscribed, consisting of the relations with those whom they supervise and are supervised by. One would expect a generalized, supervisorial administrative component at each level.

American schools, by contrast, would be expected to have a politically-oriented administrative component organized around the institutionalized categorical scheme rather than the supervision of work, that is a plethora of highly specialized administrative personnel, each of whom is expert in a particular categorical focus. This emphasis would reflect the environmental organization around an institutionalized categorical scheme rather than on specifying and controlling work activities.

Defining Centralization

Fragmentary and Integrative Centralization

We know that most of the states specify particular characteristics a school must have, such as class offerings, physical facilities and personnel to be a proper and therefore accredited school. How do the successful, if limited, attempts by the states to regulate bureaucratically the programs and procedures of their schools fit into this picture? There seem to be two very different forms which attempts at centralization can

take, each of which is reflected by certain characteristics of the system of education in contemporary America. To There is, first, the categorically-oriented fragmentary centralization exemplified by the spectrum of Federal categorical programs. Second, there is vertical integration into a system governed by an increasingly clear-cut hierarchy of command into which the admittedly limited bureaucratic controls by the states falls. We call this second form integrative centralization.

The effects which these two forms of centralization might have on local schools should differ dramatically since they represent, respectively, environmental complexity and simplification. Fragmentary centralization should produce administrative growth and complexity, while integrative centralization, in the pure case should produce administrative simplification (J. Meyer 1979). Of course a pure case of integrative centralization would require that alternative sources of environmental authority or support be eliminated concomitant to increased control from one segment of the environment. This would be the case if the educational system were completely integrated and the institutional environment thereby reduced to a single unified influence. In such a situation we would expect vertical integration and administrative simplification because the efforts of administrators would center upon supervising the work of their subordinates and coordinating their own tasks with their supervisors and not towards the variety of environmental

contingencies to whom they also relate at present (J. Meyer 1979).

A Theoretical Challenge

The contemporary American case is not so straightforward and is, therefore, more challenging theoretically. The resources upon which schools are dependent come from multiple sources and the demands made upon schools are varied. Therefore an attempt to increase the authority over schools, even an attempt at integrative centralization, from one of these forces in the institutional environment might not represent significant simplification of the matrix of environmental relations which each level in the school hierarchy must maintain. Most cases of moves toward integrative centralization by contemporary states represent only very incomplete integration. Even in Hawaii,[2] which has no district level educational authority, over forty percent of educational funding is federal, and most of that originates from categorical programs funded in individual schools rather than distributed throughout the state educational budget (NCES 1976; 1977). So it is not clear that the strong

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[2] There is considerable justification for dealing with the Hawaiian system as a separate case, although this can not be done with our sample because there are so few Hawaiian schools included (six before missing data problems are taken into account). The Hawaiian system is still substantially more integrated than that of other states; control is more general and is not organized as extensively around categorical issues. So it might represent a case with a fairly simple institutional environment for local schools despite whatever resources and influence originate from the Federal government or parents and community members. An intensive study of the Hawaiian system would be an appropriate and important focus for future research efforts.

assertion that integrative centralization produces environmental simplificationis justified. We can predict, however, that unlike fragmentary centralization, integrative centralization will not produce environmental and therefore structural complexity.

Defining Structure

The Signaling Metaphor

We shall use the signaling metaphor expounded by Marshall Meyer to help illustrate the process we propose is occuring to change school structures. In this portrayal a signal is a visible, changeable characteristic of an organization that can serve to convey data about less easily observeable attributes of the signaling organization. This process occurs when the presence of such attributes affects the way the signaller will be responded to (and especially rewarded). Organizational structure can indicate the intentions of the organization in the less easily observeable spheres of policy, strategy and daily work activities (M. Meyer 1979).

When an organization faces a spectrum of conflicting demands from competing publics, it is less likely to satisfy any particular constituency (Pfeffer and Salancik 1978). Deal (1979) describes at length the challenges facing a principal attempting to reconcile local demands and the requirements of governmental programs and regulations. The option of using structural signals of conformity (M. Meyer 1979) is vital to schools. Inspection and regulation of work activities is quite expensive for an organization beset with conflicting publics relative to the alternative of incorporating a number of visible

and mutually insulated structural features which can signal compliance to a number of apparently conflicting mandates. Structural signals are precisely the sorts of elaborations which should be expected in response to categorical, fragmentary centralization but not to integrative centralization.

Defining Administrative and Macrotechnical Structure

One of the features of a school which might function as a signal is its administrative social structure. The general term ". . . social structure refers to the patterned or regularized aspects of relationships existing among participants in an organization" (Scott 1981: 13). Administrative social structure would refer to an interrelated set of variables pertaining to the role of the principal and other administrators in local schools. These are the patterned aspects of relationships among administrators and between administrators and others within the school.

Another feature of the school which is a potential signal of compliance to environmental mandates is its macrotechnical structure. This concept refers to the manner in which the work process in the school is arranged on the administrative level. The macrotechnical structure is the set of practices, procedures and materials which turn out the product of schools, certified individuals. The term, as we use it, refers to administrative level arrangements like the school program, physical facilities and scheduling arrangements rather than the classroom activities (which are organized to fit within the

macrotechnical structure).

Structure as a Dependent Variable

A critic might well ask why we chose to study the structural features of schools. There are a number of reasons to prefer this focus for this particular research effort. First, the manner in which a school is likely to respond, and the characteristics which are likely to change in response to environmental stimuli are largely limited to its formal structural features (Davis and Stackhouse 1977). The structural features of an organization are relatively visible, so we would expect to find indications of environmental effects much more readily than in the less vulnerable, more highly buffered arenas of the organization (Pfeffer and Salancik 1979).

Secondly, since theoretical discussions about centralization are still at a very early stage, basic information about schools in a wide variety of environments would be very enlightening. Structural issues can be examined on this level unlike other organizational features. This strategy of using broad-based data is of particular importance because schools and their environments vary so widely across the country (Corwin 1974; Wirt 1978; Abramowitz and Tenenbaum 1978). Intensive studies and discussions of single cases and unique situations are far more common, but are less informative theoretically (J. Meyer 1978).

Third, "Formal structures exhibit regularities that can be studied in their own right without investigating the motives of the individuals in organizations" (Blau 1970: 204). The form

and structure of schools are basic features which should be examined as a preliminary step, of interest in its own right, which precedes investigations into the effects of centralization on issues such as efficiency.[3] We recognize, of course, that structural features might have only limited bearing on the daily work of the classroom teacher; administrative structure seems to be detatched from the classroom work group level of the organization (cf. Bidwell 1965; March and Olsen 1976; Deal et. al. 1977; Davis et. al. 1977; Meyer and Rowan 1977; 1978). But overall, structure is an appropriate and interesting focus for this and other inquiries.

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[3] There are many important and interesting facets of individual motivation and action which are relevant to schools and affect those within them, but many of these features should not be addressed with the same methods as structural issues. At the very least an additional pool of respondents must be questionned (Mintzberg 1971; Cohen et. al. 1979).

We shall not, for example, address the leadership techniques used by administrators to affect the behavior of members of their organization. The difficulties inherent in an inquiry into such topics are illustrated by studies which report high leadership effectiveness and group cohesiveness ratings by members of a sucessful group, even when their success is the product of random assignment (Staw 1975; Pfeffer and Salancik 1978). So the problem can not be solved simply by asking teachers about the quality of their principal's leadership, as well as asking her or him, although this would would represent an improvement over using the self-report (Gross and Herriott 1965). Research designs where an actual observation is made of actors are preferable. It is important to observe, for example, where and how administrators and specialists spend their days, what goes on in meetings, which rules are communicated to teachers and then which are enforced, who observes in classrooms and what is communicated to teachers about their assessment (cf., Thompson et. al. 1975; Dornbusch and Scott 1975; Sproull 1976). Of course there are methodological concerns about the role played by participant observers as well (Scott 1965).

CHAPTER III

OPERATIONALIZING THE THEORY

The Process Predicted

To reiterate, the process we expect is consistent with the institutional hypothesis about the impact of increasing the extent of centralized state authority. Given the fragmented nature of the contemporary American educational system and its institutional environment, it is expected that attempts to increase influence at the national level would produce increased complexity and not simplification of environmental relationships. Specifically, fragmentary centralization is predicted to result in an expansion of the school administrative component, in terms of both size and complexity, and in an increasing shift in focus from issues of technical coordination to more political questions of incorporating environmental forms and definitions (J. Mayer 1979). For example, incorporating programs and adding specialists in areas defined within the institutional environment would be of primary importance to schools because this would signal the intent of the school to focus some of its resources on that area of concern.

In sum, we expect fragmentary centralization to be accompanied by elaboration of those school features which can be used to signal isomorphism with environmental concerns and an accompanying shift in focus away from issues of control of work. On the other hand, integrative centralization will not be

accompanied by a general expansion of these features. The effects of integrative centralization, especially in the pure case, will tend towards simplification rather than expansion. This bring us to our central theoretical hypotheses that:

> 1. Integrative centralization at the state level is not accompanied by elaboration of organizational features serving as structural symbols.
>
> 2. Fragmentary centralization at the state level is accompanied by elaboration of organizational features serving as structural signals.

We begin our discussion of the operationalization of this hypothesis with a more elaborate discussion of our independent and dependent variables. We first examine the facets of a school we expect to find responding to the changes and mandates arising in its institutional environment. We discuss both the indicators we use to measure these concepts and the relationships among these variables. Then we examine the indicators available to measure each form of centralization. The indicators for each of these four concepts are described only briefly in the next section; complete documentation of the original items is presented in Appendix A.

Structural Signals

Indicators of Administrative Structure

We are able to assess the impact of the institutional environment on two facets of the administrative social structure, administrative expansion and the decentralization of decision-making. These are both regularized facets of the organization which deal with personnel bureaucratization rather

than with issues of process (Pugh et. al. 1968).

Administrative expansion refers to the addition of positions and personnel to this level of the organization. Historically, administrative expansion was thought to accompany the differentiation of organizational roles into specialized subunits, as a means of integrating these subunits (Blau 1970; Lawrence and Lorsch 1967). However, there is little evidencce for this notion to be found in the literature on schools (Bidwell 1965; Davis et. al. 1977; Deal et. al. 1977; J. Meyer and Rowan 1977; 1978). On the contrary, administrative expansion is a useful strategy for accomodating competing demands and satisfying a variety of constituencies simultaneously (Pfeffer and Salancik 1978). Many of the administrators added to the staffs of contemporary schools are highly specialized personnel who deal with particular insulated and politically-defined institutionalized structures in the environment and not with direct supervision and coordination (J. Meyer 1979). For example, specialists typically advise rather than supervise teachers, even in the infrequent cases where they have formal direct line authority (Dalton 1950; Cohen et. al. 1978), despite assumptions made elsewhere (cf. Katz 1964; Corwin 1974).

We have two operational measures of administrative expansion, the number of specialists and the number of general administrators on the school staff. We shall retain them as two separate variables because we expect the effects of fragmentary centralization on specialists to be more apparent, if our position is correct, since the focus of those in special

administrative positions is largely upon political and environmental issues (rather than with questions of control and supervision as is the case with general administrators). Unfortunately, we have no measure of the critical clerical component of the administrative staff.

Decentralized decision-making can also facilitate accounting for compliance to different environmental mandates, and thus is a potentially valuable signaling adaptation. Available evidence confirms the speculation that it is a product of complexity in the institutional environment of schools (Deal et. al. 1977; Stackhouse 1978; Abramowitz and Tenenbaum 1978; Abramowitz and Stackhouse 1981).

There are three measures of the decentralization of decision-making in the school which we shall use. First, a composite measure of the variety of staff members who participate in seven administrative decision arenas is included. This variable includes principal reports of participation by assistant administrators, counselors, department heads, and individual teachers in school management decisions about issues from teacher selection and budget formulation to the determination of course objectives. Second, the number of types of school-level administrative meetings which are held on at least a monthly basis is also included. More broadly-based decision participation in a greater variety of issues and a greater variety of administrative meetings are both indicative of a more decentralized decision-making structure in schools.

Three other aspects of the administrative social structure of the school warrant brief discussion, although they are not a direct part of this study. The first of these, the differentiation of the school into departments and other subunits would be expected to reflect the categories of environmental institutions much as administrative expansion is thought to do. Formalization, the definition of rules governing the responsibilities of and procedures for different organizational positions is also unmeasured. Where formalization is included, researchers find that it is related to the delegation or decentralization of decision-making authority (Blau and Schoenherr 1971; Scott 1981). Where rules do exist, they might be mechanisms for legitimating decentralization and at the same time signals that environmental standards and categorical schemes have been incorporated into governance structures and are a major concern. Finally, what Pfeffer and Salancik (1978) call the manipulative aspects of an administrative role might represent an important step toward mitigating demands. Attempts to influence the formation of environmental constraints and categories can help to minimize the need for adaptation on the part of the school as could efforts toward facilitating communication with environmental agencies, even though verbal pronouncements as signals of concern are often discounted (M. Meyer 1979).

Indicators of Macrotechnical Structure

A second school feature which can signal compliance to the institutional environment is what we have called the

macrotechnical structure. This involves the administrative arrangements which organize the work activities in the school. Of course we are dealing with only one level of the school organization, the administration, and the work of administrators is concerned primarily with conferring institutionalized status changes rather than with relaying knowledge (in other words with turning students into graduates). For example, the variety of courses offered in the school program taps one of the sorts of activities which produce graduates. And it is quite easy to see how adding a course to the school roster, in consumer education for example, could signal concern on the part of the school with that issue.

Our first indicator combines the range of traditional and nontraditional courses offered at the school. We have measures of three additional aspects of macrotechnical structure as well; the variety of alternatives to regular classroom instruction which can be used to earn credit, the variety of course-length and other scheduling alternatives to regular courses, and the variety of special physical facilities available to staff and students.[1] Greater variety in these areas indicates a more elaborate macrotechnical structure.

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[1] While program, scheduling and credit alternatives seem to tap the routineness or integration of administrative work, that is the process-related aspects of the operations, the facilities variables fit into the materials rather than operations category (Hage and Aiken 1969; Pugh et. al. 1969; Scott 1975; 1981). Each of these possible measures varies along dimensions of diversity or complexity; they tap the number of different elements that must be dealt with simultaneously.

However, each school does not create its own technology, especially in terms of how graduates are made. Many, or even most aspects of this process are resident in environmental definitions (Dreeben 1968; J. Meyer 1979). What is taught and what is learned in sophomore English classes might vary greatly among schools, but virtually all American high schools are organized around institutions called classes. Meaningful complexity in the school macrotechnical structure would require something more complex and more variable than the standardized classes and alternatives to classes which are found in contemporary high schools. Even though the range of academic courses, alternative means to obtain academic credit, variations on the main scheduling theme and the facilities installed at different schools might vary greatly, most of these alternatives are drawn from a common pot of possibilities. Furthermore, they involve the same basic technical process. Because of their standardized nature they do not represent a broad spectrum of technological complexity. However, it is not surprising that within a particular level of a single type of organization the technology does not vary freely (Blau 1970; Scott 1981).

On the other hand, the symbolic or institutional attributes of the school program do show marked differences from school to school. Incorporating a new course or adding a new facility or program to the formal roster of the school's offerings can go a long way toward satisfying environmental demands for action in that arena. So the variety of such offerings reflects a significantly wide range of environmental

mandates, even though the range of technical complexity represented is fairly narrow. So we expect that the variation in macrotechnical structure among schools is sufficient to reflect responses to fragmentary centralization in their institutional environments.

Relationships among Structural Signal Variables

We have discussed two sets of variables which might serve as structural signals of the incorporation of environmental mandates by the school. Next, we address the ways in which the variables within these groups might be interconnected.

A common approach is to see administrative structure as the product of adaptations to the technical environment and to technical imperatives (Thompson 1967; Perrow 1970). A complex or diverse technology is thought to produce a differentiated, complex organizational structure. The evidence relative to this proposition is weak and inconsistent yet somewhat supportive (Pfeffer 1978; M. Meyer 1978; 1979; Cohen et. al. 1979; Scott 1981). A correlation seems to exist between technology and environment but the direction of causation is unclear. For example, in a number of studies the complexity of structural arrangements is seen to contribute to technological innovation and complexity (cf., Aiken and Hage 1968; 1971; Baldridge and Burnham 1973; Moch and Morse 1977). Also there are a number of methodological challenges which are unmet in many studies (Scott 1981). One specific problem is the implicit or explicit assumption that a rational process of maximizing efficiency by matching structure to technology is operating (cf. Hage 1965).

The process is much more subtle than this rationalistic assumption portrays, however. Schools neither create their macrotechnical structures nor define the potential forms their administrative structures will take. Theorists may choose to assume that technology molds structure, because this effect appears to be the stronger in a particular case (cf., Cohen et. al. 1979). But it is at least equally likely that their intercorrelation is the result of their indivi1ual adaptations to a common environment. Both the administrative and the macro-technical structures of schools reflect features impressed upon them or borrowed from their environments. To recapitulate, if both of these features are responsive primarily to the institutional environment, then they would be intercorrelated. They would represent a system of arenas which could be used as signals of compliance to environmental mandates and categories. The major change impetus would be from the environment, and not a matter of internal dynamics (Griffiths 1967). So it would be more appropriate to study interrelationships among these organizational features using data from a variety of types of organizations (Pfeffer 1978).

Measuring Centralization

Indicators of Integrative Centralization

As discussed earlier, two interrelated but not synonomous means used by state governments to solidify their influence on local schools are important to assess, and we include measures of both in this study. First, we shall use the extent of direct funding of local schools by their individual states. Second, we

have information about the range and strength of specific official rules and definitions by the state which constrain the local educational programs, processes and facilities. These data are combined into an index by Wirt (1978) which includes the full range of issues regulated in the state codes. We have, in addition, information about two specific sorts of regulations which are particularly salient; the extent to which text selection and curriculum limits are delineated by the state. These measures represent a total of three indicators of integrative centralization through official rules and one of centralization of funding.

The survey data from the individual principals includes information from the principals which adds depth to our indicators of integrative centralization. Principals were asked to report their perceptions about the extent to which state regulations constrain their activities in a number of administrative spheres. The choice to use this variable involves two isses. First, the survey did not differentiate between general state regulations and those regulations specific to the various state or state-administered Federal programs with which the school has had contact. So this variable might tap perceptions about experiences with both fragmentary and integrative centralization.

Secondly, the principals' reports might be less dependable and therefore less valuable than state-level data from an outside source like the state codes. Specifically, there might be systematic errors in their reports which would produce

correlated errors among the operational variables. Yet some theorists assert that perceptions within an organization are the most appropriate means to capture measures of relevant environmental attributes because only those characteristics of the environment which have been perceived can influence decisions (Dill 1958; Lawrence and Lorsch 1967; Pfeffer and Salancik 1978). Furthermore, when the situations of individual schools within each of the states can vary substantially, it is important to include a measure of the experiences each school has with its environment. So this index is included as a fifth measure of integrative centralization, with the above reservations.

Indicators of Fragmentary Centralization

We have three measures of the experiences of each individual school with fragmentary centralization. First, each principal was asked about the extent to which their school is involved in special categorical programs. A very important characteristic of this measure is that it captures the range of programs with which the school has current experience and not the absolute level of funding the school enjoys. We chose this sort of measure because it is the increasing variety of categorical schemes which produces many signaling adaptations rather than extensive dependence on a single program (which would be tapped by a measure utilizing the overall amount of funds). Since the principals were asked to tick off categorical programs from an incomplete list of twelve possibilities, we supplement this measure with two variables gleaned from

questions about specific programs (as opposed to types of services) offered, specifically Remedial Basic Skills and Job Placement Programs. Both of these kinds of programs reflect important categories within the institutional environment of schools, so their presence is indicative of experience with fragmnetary centralization.

Our fourth measure of fragmentary centralization taps the financial dimension. The extent of state special categorical programs is reflected in the per pupil support provided by the state for one particular program, bilingual education. A potential problem is that it is skewed toward the Western states, and those states with large immigrant populations (e. g. New York) which have a much higher proportion of bilingual students. However there are states with a need for bilingual education (that is those who receive Federal Title VII Bilingual monies) yet have no special state bilingual program in addition (National Advisory Council 1977). So some measure of control is provided, even though this variable does not tap the extent of fragmentary centralization in states which have few bilingual students but might have a special state compensatory or vocational education programs, for example.

This brings us to our operational hypotheses:

1. Financial and regulatory integrative centralization by a state are not not accompanied by elaboration of the administrative or macrotechnical structures of schools in that state.

2. Financial and regulatory fragmentary centralization by a state are accompanied by elaboration of the administrative and macrotechnical structures of schools in that state.

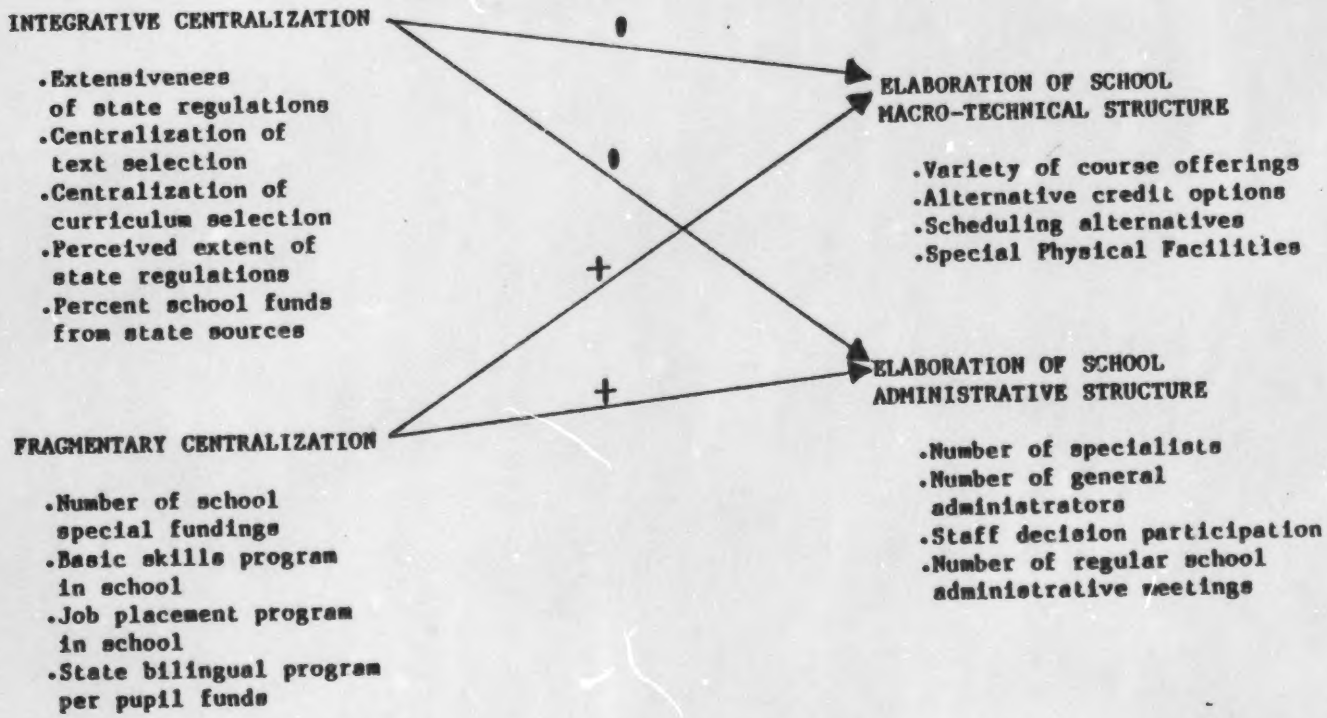
The relationships among the theoretical variables and their operational indicators are illustrated in Figure 1. This figure does not include the control variables, the effects of which are discussed in the following chapter.

One limitation of this study should be mentioned at this point. There is an additional process which is also thought to be a result of fragmentary centralization, although we shall not and indeed can not pursue it because of limitations in our data. Specifically, fragmentary centralization should also produce a deemphasis on the coordination and supervision of teaching. The results from an investigation of this additional prediction would greatly buttress our theoretical stance.

FIGURE 1

RELATIONSHIPS AMONG THEORETICAL CONCEPTS AND THEIR

OPERATIONAL INDICATORS



CHAPTER IV

RESEARCH DESIGN

General Approach: Causal Modeling

We propose to use a causal modeling approach to determine if the observed relationships between centralization and the administrative and macrotechnical structures of schools are consistent with our hypothesis. Specifically, we estimate a series of multiple regression equations. These equations include a number of control variables which are discussed later in this section. Only a single indicator of integrative or fragmentary centralization is included in each equation, in addition to the control variables because of the high level of intercorrelation among each cluster of indicators.

The primary driving force in this formulation is expanding fragmentary centralization by the individual states which produces elaboration in local schools. If we were to test our contention that administrative structure is driven primarily by environmental forces by assessing the impact of technical factors with environmental effects controlled the model would become underidentified. There are no additional exogenous variables which could be used as instrumental variables (Duncan 1975) to permit investigation of these relationships.

Unit of Analysis: The School

Sociological research reports a substantial lack of

agreement among principals and teachers within a single school district about the nature of the relationship of the schools to the district, including the nature of district policies and regulations. Similarly, there are reports of important differences in organizational features among schools within a district (J. Meyer et. al. 1978). This variance reflects the different experiences of individual schools with the state and therefore with the district. Of course the relationships of schools to their local communities can also vary widely, and further color their relationship with the district (Campbell and Brunell 1967; Carter 1967). Since the experiences of schools can be widely divergent, it makes sense to focus on them as our unit of analysis even though they are nominally dependent segments of the larger district organization (Pellegrin 1971).[1] Furthermore, they are usually separated physically from the district office and principals have a fairly high degree of authority, autonomy and accountability for their local schools (Abramowitz and Tenenbaum 1978). Local schools have a functioning local administrative component which responds directly to the environment of the school.

The Sample Data Base

In order to test our hypotheses, we shall perform a

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[1] In the optimum case a design would, of course, include information about both the district and the local school, so that the role of the school district as an additional agency in the institutional environment of the school could be addressed. We are unable to do so, however, except in a very elementary and unsatisfying fashion, as is discussed shortly.

secondary analysis of survey data collected by the National Institute of Education (NIE). The respondents to the survey were principals in American public secondary schools. Nearly three-fourths of those to whom the questionnaires were mailed, in fact about ten percent of the population of the nation's high schools, are included among the respondents.[2] The data were collected in 1977 about the 1976-77 school year, so the information is still fairly current.

There are obvious advantages to having information about schools in such a great variety of environmental situations. But there are a number of disadvantages to secondary analyses of data collected primarily to tap features other than those in which one is interested. The instrument focused intensively on the programmatic offerings of the school, and addressed a number of organizational issues as well, but did the latter in at best a cursory fashion. Unfortunately, some of the topics which were covered might have been more profitably addressed to other informants within the school, or investigated using other methodologies, while a great deal more could have been gleaned from the principal about the structural features of the school, and the texture and impact of the environment. For example

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[2] Vocational schools, continuation schools, alternative schools and schools exclusively for the handicapped were excluded from the sample. Also schools in the state of Alaska did not participate because of plans by the Department of Education in that state to conduct its own survey. For further details of the sampling plan and sample characteristics see Abramowitz and Tenenbaum (1978).

among the variables which are either missing from the survey information or are so inadequate as to be unuseable but which would have shed great light on the issues under discussion are formalization (rules, concreteness of position descriptions) and differentiation (the number of departments). Neither is there any information about the presence of clerks at the school nor the variety of specialists on the staff. We do not know, for example whether a school reporting two specialists on its staff has two full-time remedial reading specialists or four half-time specialists each of whom is in a different field. Finally, there is no detailed information about two important sources of environmental influence, parent groups and teachers' unions (cf., Corwin 1974).

Some of the information available from the NIE about the centralization of each of the individual states was originally obtained from three outside sources. One of these is a study commissioned by the NIE which codifies the legal requirements for schools in each of the individual states (Lawyers' Committee 1974). An index designed by Wirt (1978) to summarize these legal requirements was included. Finally, financial data were gleaned from the National Center for Educational Statistics summary (NCES 1976). Additional information about the level of state centralization was obtained directly from other Federal publications (NCES 1977; National Advisory Council 1977).

Other Influences Being Equal: Control Variables

School Size

There are three factors which might have confounding

effects in the results of our analyses. The first of these is school size. The effect of organizational size on administrative structure is widely discussed. Larger organizations are thought to be more formalized and to have more highly decentralized decision-making. As far as administrative expansion is concerned it is straightforward enough that the number of administrators on a school staff will be larger when the total number of staff members is larger, and when more students are enrolled at the school. But most studies have not dealt with the matter in a direct fashion, and their results are unreliable as a consequence. The story is, overall more complicated than it appears to be (Dewar and Hage 1978; Scott 1981).

A typical measure of administrative expansion, the administrative intensity (cf., Hawley et. al. 1961; Rushing 1966; Blau 1970; Blau and Schoenherr 1971), is a ratio variable, constructed from interrelated measures and as such suffers from statistical problems. The usual finding that size is negatively correlated to administrative intensity could be an artifact of the improper methods used (Freeman and Kronenfeld 1972). Secondly, there are different sorts of effects which have been associated with increases in size. There are economies of scale, but on the other hand, an increase in size encourages an increase in both the differentiation of activities and segmentation, with the former thought to stimulate expansion of administrative structure. Furthermore, these effects are confounded by the relationship between size and complexity (Blau and Scott 1962; Scott 1981). For example, larger schools have

more complex programs (Conant 1967; Abramowitz and Tenenbaum 1978) so the effects of size are tied into the whole network of relationships between structure and technology.

Finally, expected relationships do not occur reliably when organizations are studied over time (Holdaway and Bowers 1971). This is complicated by the inability to separate organizations that are growing from those which are declining when one has data from a single point in time; size works differently under these different conditions (Freeman and Hannan 1975). So the most important conclusion that must be reached is that these issues can not be separated conclusively and therefore studied in detail in a cross-sectional study. We must include the variable size because of its pervasive effects, and also because it was a stratifying variable when the sample was drawn, but we shall use it as a control variable and leave extensive substantive explanations of its effects to those who have time series data available.

The particular size variable we shall use is the natural log of the number of students enrolled in the school. We take the log to, first, correct for skewness and second, to assure that the maximum amount of variance is accounted for (Dewar and Hage 1978; Stackhouse 1978). Using the number of students as the base variable rather than the obvious alternative of the number of employees is preferable for two reasons. First, the number of employees represents a set of variables (for example teachers, administrators and specialists) which depends upon the number of students among other factors. It is also preferable because

the NIE data set does not include the number of clerical staff personnel so there is no reliable measure of the total number of school staff members.

Relations with the School District

A second factor which presents a potential problem is the nature of ties between a local school and the school district. The available measures which attempt to tap the texture of this relationship provide only minimal clarification. For example, an extensive variety of contacts between a school principal and district-level personnel can be indicative of at least three sorts of ties between the two organizations. First, they might represent attempts by the district to centralize its control and thereby simplify the environment of the school by in effect creating a buffer to other constituencies including the state. On the other hand, attempts to increase district influence might present the school with an additional active environmental factor with which it must deal. In short it might represent environmental complexity analagous to that of fragmentary centralization. A third possibility is clearly suggested when the major form the ties take is meetings. Perhaps these meetings do not represent an attempt by the district to increase control but are attempts by school administrators to gather information about and manipulate one component of their environment.

When previous analyses were performed on the NIE data set, the relationships found between school structural characteristics and various indicators of the school-district relationship were inconsistent and unimpressive (Abramowitz

and Stackhouse 1981). The results seemed to indicate that some mixture of the three scenarios is in operation. Either a number of different types of forces is at work within the school, or there are different processes in operation in different schools and districts with the conflicting effects offsetting one another statistically. We choose to use an index of the frequency of meetings between the principal and various district personnel as a control variable. We shall be alert for possible interactions between this variable and state centralization (which one might expect if, for example, the district functions as either a competitor or buffer in the environment of local schools).

Locational Stratifiers

When the NIE sample was drawn, the schools were selected randomly within several categories of schools. These stratifications were based on school size, as already mentioned, and also on the regional and metropolitan locations of the schools. The authors intended the range of sampled schools to be representative of the relative:

> . . .number of students in the population that attend schools in the various cells. Consequently the sample is representative of students rather than schools. Therefore students in rural and small schools were not overrepresented, nor were students in urban and large schools underrepresented (Abramowitz and Tenenbaum 1978).

In other words, since the small rural school forms a majority of American schools but only a minority of American students attend such schools an attempt was made to more accurately measure the scope of American high schools experienced by their students.

Again it is important to include stratifying variables as control or explanatory variables, especially when they interact with other explanatory variables. In this case for example, previous studies seem to indicate that there are regular variations in school administrative and macrotechnical structure among the regions of the country. Also it was found that although urban and suburban schools are surprisingly similar in many respects, they are quite different from rural schools. To confound the issue further, rural schools are not evenly distributed throughout the country, and furthermore tend to be quite small (Abramowitz and Tenenbaum 1978; Abramowitz and Stackhouse 1981). There are also considerable differences in the governance patterns of states by region. We shall include locational variables as controls and look with interest to see if the apparent effects of these variables are still in evidence when other environmental variables are taken into account. Perhaps they have simply served in past research as flawed indicators of the causal variables which we find of interest, state centralization.

CHAPTER V

RESULTS AND CONCLUSIONS

The Effects of Integrative Centralization

The relationships reported in Tables 1 and 2 are markedly different. The pattern of observed relationships presented in these tables provides considerable support for our hypothesis.

Hypothesis 1 was that integrative centralization would not produce an elaboration in administrative or macrotechnical structure. The results presented in Table 1 support this position. The effect of integrative centralization is clearly not to produce an increase in the level of administrative or macrotechnical complexity. Rather there appears to be some small degree of simplification of these features, a clearer pattern than that which we were confident of finding. Overall, there are fifteen significant negative associations (where the regression coefficient is greater than twice its standard error). Twenty-four non-significant (zero) relationships and a single positive association complete the table; the effects of integrative centralization were non-positive, as hypothesized.

The mild negative associations were, for the most part distributed evenly throughout the table. The state rules index had significant negative effects on the alternative means to gain credit and the two measures of administrative expansion.

TABLE 1

THE EFFECTS OF STATE INTEGRATIVE CENTRALIZATION UPON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE

Regression Equations with Logsize, Regional and Metropolitan Location and District Contacts Controlled; Standardized and (Metric) Coefficients.

Dependent Variables	Independent Variables: Rules Index	Text Select	Curric-ulum	Perc'ved Rules	Percent State $
Macrotechnical Structure					
Courses Offered	0	-.1130* (-.5169)	-.0843* (-.2394)	-.0559* (-.0904)	-.1272* (-.0319)
Schedule Altern's	0	-.0664* (-.1134)	0	0	-.0846* (-.0079)
Credit Altern's	-.0872* (-.3626)	0	0	0	-.1191* (-.0234)
Special Facility	0	0	0	0	0
Administrative Structure					
Specialist Personnel	-.0941* (-.6826)	-.0900* (-.5646)	0	0	-.0564* (-.0194)
Regular Administ'r	-.0510* (-.1620)	0	0	0	-.0496* (-.0074)
Staff Particip'n	0	-.0938* (-1.110)	0	.1886* (.7936)	0
Admin'tive Meetings	0	-.0654* (-.2180)	0	0	0

*Metric coefficient is at least twice its standard error.

The centralization of text selection procedures was associated with fewer course offerings and scheduling alternatives. It also had negative effects on the number of specialists and the two measures of decentralization. A higher percentage of state funding for schools had fairly consistent negative associations. It was associated with fewer course, scheduling and credit alternatives and fewer regular administrators and specialists. The centralization of curiculum selection has an apparent negative effect only on one appropriate variable, the variety of course offerings, because there is little variance in the state variable. Finally, perceived state management rules were associated with more limited course offerings. All of the other measured relationships between integrative centralization and school administrative and macrotechnical structure were non-significant (zero) with one exception. As was predicted integrative centralization is not associated with an increase in the elaboration of these structural features.

The single fly in our ointment, the apparent positive effect of perceived state management rules on staff decision participation, is probably a product of the lack of specificity in the original item exacerbated by a slight multicollinearity effect (the simple correlation between these two items is .06 as compared to a regression coefficient of nearly .19). When the principal was questioned about state regulations which influence school management, no discrimination was made between general state regulations and those which are associated with the specific state and state-administered special programs with

which the school has had contact. Indeed this variable is strongly correlated to the number of special program findings enjoyed by the school. So it is not surprising that its effects are not straightforwardly those of integrative centralization.

The Effects of Fragmentary Centralization

The second hypothesis was that fragmentary centralization is accompanied by an elaboration of administrative and macrotechnical structures. Upon examining Table 2, one is immediately struck by the different pattern in evidence here. In general, complexity seems to be a byproduct of fragmentary centralization, while the integrative form clearly did not produce a pattern of increasing complexity. In Table 2 we find overall twenty-two significant positive, one significant negative and nine zero relationships.

In general the indicators which reflect the experience of the individual school have the most consistent effects. The number of special categorical fundings, the presence of a basic skills program and the presence of a job-placement program each had positive effects on the variety of courses offered, the variety of alternative means to gain credit, the variety of special physical facilities, the number of specialist personnel in the school and the extent of staff decision participation. None of these three variables affected the variety of scheduling alternatives, and only the presence of a placement program had a significant effect on the number of general administrators. Finally, the effect of the special fundings variable on the variety of regular school administrative meetings was

TABLE 2

THE EFFECTS OF STATE FRAGMENTARY CENTRALIZATION UPON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE

Regression Equations with Logsize, Regional and Metropolitan Location and District Contacts Controlled; Standardized and (Metric) Coefficients.

Dependent Variables	Independent Variables: Special Fundings	Basics Program	Placem't Program	Per Pupil State B'gl
Macrotechnical Structure				
Courses Offered	.0672* (.0909)	.1541* (.8497)	.1222* (.6670)	-.0549* (-.1266)
Schedule Altern's	0	0	0	0
Credit Altern's	.1002* (.1045)	.1267* (.5493)	.1433* (.6148)	.0781* (.1417)
Special Facility	.1252* (.1565)	.1870* (.9751)	.1040* (.5365)	.0505* (.1103)
Administrative Structure				
Specialist Personnel	.0742* (.1361)	.0845* (.6480)	.0808* (.6126)	.0860* (.2759)
Regular Administ'r	0	0	.0619* (.2090)	.0531* (.0760)
Staff Particip'n	.1126* (.3937)	.1170* (1.702)	.0843* (1.214)	0
Admin'tive Meetings	0	.0867* (.3358)	.0488* (.1871)	0

*Metric coefficient is at least twice its standard error.

insignificant.

The overall level of state involvement in bilingual program support had an unconvincing pattern of effects, although a summary figure including the level of state support for all of its special categorical programs might, if it were available, produce more substantial effects. This variable had positive relationships with only four measures of administrative or macrotechnical structure; the variety of credit alternatives and physical facilities and the two staffing variables. Furthermore, the single negative effect in the table was between this state variable and the variety of course offerings; it reflects an inflation of the measured relationship (from a simple correlation of .00) because of the striking preponderance of both state bilingual programs and varied course offerings in the West and in a few large Eastern states.

As was predicted, the effects of fragmentary centralization on the number of specialist personnel is more consistently apparent than on general administrators. Again, it is to be expected that specialists, whose job titles and identities are organized around the categorical scheme would be those added by the school rather than general administrative personnel. This difference is probably less striking than it would be had the original items been more clearly phrased; one can understand a principal describing specialized assistant administrators as vice-principals rather than specialists because the examples given for the latter were oriented towards instructional specialties.

The lack of effects upon scheduling alternatives is, at first glance, more problematic for our hypothesis. However the general lack of variance in the variable, that is the lack of scheduling alternatives provides a measure of reassurance.

The Effects of the Control Variables

A set of control variables was also included in each of the equations presented in the first two tables. Table 3 presents the results of a series of eight equations with the five control variables as predictors of the administrative and macrotechnical structure variables. When the centralization measures were added to these equations, there were slight shifts in the coefficients for each of these variables, but with the exception of the previously-mentioned multicollinearity problems the shifts were minor. There seem, for example, to be real regional variations independent of the level of state centralization.

School size, as measured by the natural log of the number of students, had a strong, positive and pervasive effect on each of the indicators of structural complexity. Larger schools had more elaborate programs and facilities, and a more complex administrative structure. Larger schools also tended to have a more participatory decision-making structure, as measured, largely because they had more and more types of personnel who could be described as participating in each of the decision arenas. Whatever the driving force in the relationship between size and complexity, the relationship is clearly very strong.

TABLE 3

THE EFFECTS OF SIZE, LOCATION AND DISTRICT CONTACTS

ON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE

Standardized and (Metric) Regression Coefficients

Dependent Variables	Independent Variables				
	Logsize School	Location in West	Location in East	Rural Location	District Contacts
Macrotechnical Structure					
Courses Offered	.4343* (1.403)	.0755* (.5131)	.1762* (1.053)	-.0821* (-.4296)	.1230* (.2187)
Schedule Altern's	.1330* (.1607)	.0	.1875* (.4187)	.0	.1071* (.0712)
Credit Altern's	.2618* (.6647)	.3080* (1.646)	.0618* (.2903)	-.1449* (-.5962)	.1063* (.1486)
Special Facility	.3692* (1.218)	.0834* (.5360)	.0	.0	.0797* (.1340)
Administrative Structure					
Specialist Personnel	.5270* (2.367)	.0	.0	-.1072* (-.7798)	.0605* (.1497)
Regular Administ'r	.6107* (1.221)	.0856* (.3604)	.0	-.1008* (-.3266)	.0
Staff Particip'n	.3857* (3.286)	.1587* (2.847)	.1416* (2.231)	.0	.0935* (.4387)
Admin'tive Meetings	.3908* (.8863)	.1024* (.4889)	.1265* (.5305)	-.1293* (-.4752)	.1779* (.2221)

*Metric coefficient is at least twice its standard error.

There are also certain noticable regional differences in complexity. Schools in the West and East tend to have more elaborate administrative and macrotechnical structures, while rural schools tend to be simpler, even with size and the other locational variables taken into account. Also, the schools with more extensive district ties seem to be those which are more structurally complex. Whether this is a matter of a strong district facilitating elaboration, of principals in elaborate schools seeking out contacts and advice, or perhaps of ties to the district acting as a form of fragmentary centralization is not clear, however. As we discussed earlier, the lack of adequate information about the school district severely limits the conclusions which can be made about this issue. However, the consistent positive effects of district contacts, coupled with the lack of an interaction effect with the centralization variables rules out one possible explanation. The district does not seem to act as a buffer to the school by absorbing environmental complexity. There is no support for the argument that schools are so simple organizationally because districts are complex.

In sum, each of the control variables has a strong effect on school structure. Whatever the causal process behind these influences, they are real and remain significant even when the effects of centralization are taken into account.

Summary of Research Findings

The results of these analyses are consistent with our hypotheses. As mentioned repeatedly in previous chapters, we are

performing a secondary analysis on a data set with measures which are weak and incomplete because they were designed to capture other dimensions of the school, in an attempt to uncover the general nature of relationships among these variables. The pattern we found is strikingly consistent. The overall trends in the relationships among these variables is clear even though some of the individual associations are problemmatic. Table 4 summarizes our results.[1]

TABLE 4

THE DIRECTION OF SIGNIFICANT EFFECTS OF CENTRALIZATION ON ADMINISTRATIVE AND MACROTECHNICAL STRUCTURE

Type of State Centralization	Direction of Regression Coefficient		
	Positive	Zero	Negative
Integrative	1	24	15
Fragmentary	22	9	1

[1] If the zero coefficients in Table 4 were divided by sign, in other words if the minus zero coefficients were placed with the signficant negative associations and the plus zero coefficients with the positive, the pattern effects would still be clear. For integrative centralization there would be thirty negative and nine positive and for fragmentary centralization three negative and twenty-nine positive scores. Note that the positive scores for the integrative form were not with the stronger indexes of rules and finances. Also, the three negative coefficients with fragmentary centralization were all with the state bilingual support variable. One should not, of course dwell on results depending on an association in the direction predicted, for most of these zero coefficients represent differences of less than .01 in one direction or the other.

Implications and Concusions

One disadvantage of a fine-grained strategy is that we must depend on an interpretation of the consistent patterns in a set of results to guide our acceptance or rejection of a hypothesis. We must attempt to understand and tentatively explain individual results contrary to this pattern, while seemingly disregarding them when making conclusions. With this study, however, none of the available methods of summarizing a pattern of data with a single statistic or table is appropriate. The variables do not form four readily interpretable composites and the need for the inclusion of control variables precludes some strategies. Although one could conceiveably construct an unmeasured variables model, the assumptions of this technique can not be met so the results would be unreliable. Specifically, the individual variables used to operationalize each of the four theoretical variables of interest are certainly not independent measures, so the results from this technique would very likely be quite inflated.

Partially because of the limitations in the type of analysis we chose and also because of limitations in the data base as well as because of certain inconclusive results, there are a number of questions to which we can not speak decisively. First, it is not clear that fragmentary centralization affects all potential structural signals equally. There is, of course, a definite trend toward elaboration in response to it. However, scheduling alternatives were unaffected, and the effects of state bilingual program funding were limited. Was the former

problem the result of a lack of variance in the scheduling variable? Perhaps not, since this variable was one in which a simplifying effect of integrative centralization was apparent. Perhaps it was unresponsive because increasing scheduling alternatives are seldom a specific target of special programs, or perhaps our measures of fragmentary centralization are simply too limited.

In the case of the state bilingual funding variable, it is not unlikely that the limited scope of the variable produced only limited results. However, it is also possible that we found inconsistent results because it is the experience of a particular individual school with fragmentary centralization which is salient.

A second and related issue is that we do not know if the pattern of results we have gotten would be maintained with other aspects of school administrative and macrotechnical structure. What, for example would the effects be on other potential signals like differentiation of departments?

Thirdly, we were unable to explore the web of causal relationships between our control variables and structure. A time series study of size effects, a study including adequate information about the school district and an investigation into the historical differences which might explain regional variations are each important avenues for future research. Our findings seem simply to indicate that there are real relationships here which warrant study.

Yet we can clearly conclude that centralization is not a

unitary process. The manner in which individual states increase their influence on schools has important consequences in the responses made by those schools; integrative and fragmentary centralization have very different effects on school structure. Incorporating structural signals is a clear response to increases in fragmentary centralization. The likelihood that these structural responses are not control-oriented and are also an expensive response by the school is reflected by the lack of such elaborations in response to integrative centralization. Overall, while increases in fragmentary centralization seem to further complicate the environment of the school, integrative centralization does not have such an effect; in fact we see some indications of the reverse, simplifying effect.

REFERENCES

Abramowitz, Susan and E. Ann Stackhouse. The Private High School
1981 Today. Washington, D. C.: National Institute of Education (Department of Education).

Abramowitz, Susan and Ellen Tenenbaum. High School '77: A Survey
1978 of Public Secondary School Principals. Washington, D. C.: National Institute of Education (Department of Health, Education and Welfare).

Aiken, Michael and Jerald Hage. "Organizational Interdependence
1968 and Intraorganizational Structure," American Sociological Review, 33 (December 1968), 912-929.

_____."The Organic Organization and Innovation," Sociology, 5, 63-82.

Aldrich, Howard E. Organizations and Environments. Englewood
1979 Cliffs, N. J.: Prentice-Hall.

Aldrich, Howard E. and Jeffrey Pfeffer. "Environments of
1976 Organizations," Annual Review of Sociology, 2, 79-105.

Bailyn, Bernard. Education in the Forming of American Society.
1960 New York: W. W. Norton and Co., Inc.

Baldridge, J. Victor and Robert Burnham. The Adoption of
1973 Innovations. Stanford, California: Research and Development Memorandum #108, School of Education (SCRDT).

Baldridge, J. Victor and Terrence Deal, eds. Managing Change
1975 in Educational Organizations. Berkeley: McCutcheon Publishing Company.

Berke, Joel and Michael Kirst. Federal Aid to Education: Who
1972 Governs?. Lexington, Mass.: Heath.

Bidwell, Charles E. "The School as a Formal Organization" in
1965 Handbook of Organizations, 972-1022, ed. James March. Chicago: Rand McNally.

Blau, Peter M. "A Formal Theory of Differentiation in
1970 Organizations," American Sociological Review, 35 (April 1970), 201-218.

Blau, Peter M. and Richard A. Schoenherr. The Structure of
1971 Organizations. New York: Basic Books.

Blau, Peter M. and W. Richard Scott. Formal Organizations.
1962 San Francisco: Chandler.

Campbell, Ronald F. and Robert A. Brunell. "Differential Impact
1967 of National Programs on Secondary Schools" in Society and Education, 180-185, ed. Havinghurst, Newgarten and Falk. Chicago: Allyn and Bacon, Inc.

Carter, Richard. "Voters and their Schools" in Society and
1967 Education, 160-179, ed. Havinghurst et. al. Chicago: Allyn and Bacon, Inc.

Clark, Burton R. "Interorganizational Patterns in Education,"
1965 Administrative Science Quarterly, 10 (September 1965), 224-237.

Cohen, Elizabeth G., Terrence Deal, John W. Meyer and W. Richard
1979 Scott. "Technology and Structure in the Classroom," Sociology of Education, 52 (January 1979), 20-33.

Cohen, Elizabeth G., Jo-Ann K. Intili and Susan Robbins. "Reading
1978 Teachers and Specialists: Cooperation or Isolation," The Reading Teacher, 32 (December 1978), 281-287.

Conant, James B. The American High School Today. New York:
1967 McGraw-Hill.

Corwin, Ronald G. A Sociology of Education. New York: Appleton-
1965 Century-Crofts, Inc.

. "Models of Educational Organizations" in Review of
1974 Research in Education, eds. Fred Kerlinger and John Carroll. New York: Peacock.

Dalton, Melville. "Conflicts Between Staff and Line Managers,"
1950 American Sociological Review, 15 (June 1950), 342-351.

Davis, Margaret R. and E. Ann Stackhouse. "The Importance of
1977 Formal Appearances: The Implementation of Programs for Elementary School and Teacher Evaluation" a paper presented at the Annual Meetings of the Pacific Sociological Association, Sacramento, California.

Davis, Margaret R., T. Deal, J. Meyer, B. Rowan, W. R. Scott and
1977 E. A. Stackhouse. The Structure of Educational Systems. Stanford, California: School of Education (SCRDT).

Deal, Terrence. "Beyond Implementation" a paper presented at the
1979 Annual Meeting of the American Educational Research Association, San Francisco, California.

Deal, Terrence, Jo-Ann Intili, Jean Rosaler and E. Ann
1977 Stackhouse. The Early Childhood Education Program. Stanford, California: School of Education (SCRDT).

Dewar, Robert and Jerald Hage. "Size, Technology, Complexity
1978 and Structural Differentiation," Administrative Science Quarterly, 23 (March 1978).

Dill, William R. "Environment as an Influence on Managerial
1958 Autonomy," Administrative Science Quarterly, 2 (March 1958), 409-443.

Dornbusch, Sanford and W. Richard Scott. Evaluation and the
1975 Exercise of Authority. San Francisco: Jossey-Bass.

Dreeben, Robert. On What is Learned in School. Reading, Mass.:
1968 Addison-Wesley.

Duncan, Otis D. Introduction to Structural Equations Models.
1975 New York: Academic Press.

Eisenstadt, S. N. "Bureaucracy, Bureaucratization and Debureaucratization" in A Sociological Reader on Complex Organizations, 304-311, ed. Amatai Etzioni. New York: Holt, Rinehart and Winston, Inc.

Emery, F. E. and E. L. Trist. "The Causal Texture of
1965 Organizational Environments," Human Relations, 18 (February 1965), 21-32.

Freeman, John H. and Michael Hannan. "Growth and Decline
1975 Processes in Organizations," American Sociological Review, 40 (April 1975), 215-228.

Freeman, John H. and Jerrold Kronenfeld. "Problems of
1972 Definitional Dependency," Social Forces, 52 (September 1972), 108-121.

Galbraith, Jay. Designing Complex Organizations. Reading, Mass.:
1973 Addison-Wesley.

Griffiths, Daniel E. "System Theory and School Districts" in
1967 Readings in the Sociology of Education, (ed.) Patricia Saxton. Englewood Cliffs, N. J.: Prentice-Hall, Inc.

Gross, Neal and Robert Herriott. Staff Leadership in Public
1965 Schools. New York: John Wiley and Sons.

Hage, Jerald. "An Axiomatic Theory of Organizations," Administrative Science Quarterly, 10 (December 1965), 289-320.

Hage, Jerald and Michael Aiken. "Routine Technology, Social
1969 Structure and Organization Goals," Administrative Science Quarterly, 14 (September 1969), 366-376.

Hannan, Michael and John H. Freeman. "The Population Ecology of
1977 Organizations," American Journal of Sociology, 82 (March 1977), 929-964.

Hawley, Amos and Walter and Margaret Boland. "Population Size
1965 and Administration in Institutions of Higher Education," American Sociological Review, 37 (April 1965), 252-255.

Holdaway, Edward and Thomas Blowers. "Administrative Ratio and
1971 Organizational Size: A Longitudinal Examination," American Sociological Review, 36 (April 1971), 278-286.

Katz, F. E. "The School as a Formal Organization," Harvard
1964 Educational Review, 32, 428-455.

Kirst, Michael W. Governance of Elementary and Secondary
1976 Education. Cambridge, Mass.: Appian Institute, Harvard University.

_____. New Politics of State Education Finance. Stanford,
1979 California: Institution for Research on Educational Finance and Governance, Stanford University.

Lawrence, Paul R. and Jay W. Lorsch. Organization and Environ-
1967 ment. Boston, Mass.: Graduate School of Business Administration, Harvard University.

Lawyers' Committee for Civil Rights under Law. A Study of Legal
1974 Standards for the Provision of Public Education. Washington, D. C.: National Institute of Education, Department of Health, Education and Welfare.

March, James G. and Johan P. Olsen. Ambiguity and Choice in
1976 Organizations. Bergen, Norway: Universitetsforlaget.

Meyer, John W. "Research on School and District Organization"
1977 a paper presented at the Sociology of Education Conference, San Diego, California.

_____. "Strategies for Further Research" in Environments and
1978 Organizations, 352-368, ed. Marshall Meyer. San Francisco: Jossey-Bass.

_____. The Impact of the Centralization of Educational Funding
1979 and Control on State and Local Organizational Governance. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University.

Meyer, John W., Francisco Ramirez, Richard Rubinson and John
1977 Boli-Bennet. "The World Educational Revolution," Sociology of Education, 50, 242-258.

Meyer, John W. and Brian Rowan. "Institutionalized
1977 Organizations: Formal Structure as Myth and Ceremony," American Journal of Sociology, 83 (September 1977) 340-363.

_____. "The Structure of Educational Organization" in
1978 Environments and Organizations, 79-108, ed. Marshall Meyer. San Francisco: Jossey-Bass.

Meyer, John W. and Richard Rubinson. "Education and Political
1975 Development," Review of Research in Education, 3, 134-162.

Meyer, John W., Richard Scott, Sally Cole and Jo-Ann Intili.
1978 "Instructional Dissensus and Institutional Consensus in Schools" in Environments and Organizations, 233-263, ed. Marshall Meyer. San Francisco, Jossey-Bass.

Meyer, John W., David Tyack, Joane Nagel and Audri Gordon.
1979 "Public Education as Nation-Building in America," American Journal of Sociology, (November 1979).

Meyer, Marshall W. "Introduction: Recent Developments in
1978 Organizational Research and Theory" in Environments and Organizations, 1-20, ed. Marshall Meyer. San Francisco: Jossey-Bass.

_____. "Organizational Structure as Signalling," Pacific
1979 Sociological Review, 22 (October 1979), 481-500.

Mintzberg, Henry. "Managerial Work: Analysis from Observation,"
1971 Management Science, 18 (October 1971), 97-110.

Moch, Michael and Edward Morse. "Size, Centralization and
1977 Organizational Adoption of Innovations," American Sociological Review, 42 (October 1977), 716-725.

National Advisory Council on Bilingual Education. Third Annual
1977 Report. Washington, D. C.: Intramerica Research Associates.

National Center for Educational Statistics. The Condition of
1976 Education. Washington, D. C.: Department of Health, Education and Welfare.

_____. Statistics of Public Elementary and Secondary Day
1977 Schools. Washington, D. C.: Department of Health, Education and Welfare.

Ouchi, William and Alfred Jaeger. "Social Structure and
1978 Organization Type" in Environments and Organizations, 110-130, ed. Marshall Meyer. San Francisco: Jossey-Bass.

Pellegrin, R. "Schools as Work Organizations" in Handbook of
1971 Work Organizations and Society, 343-374, ed. R. Dubin. Chicago: Rand McNally.

Perrow, Charles. Organizational Analysis: A Sociological View.
1970 Belmont, California: Wadsworth.

Pfeffer, Jeffrey. "The Micropolitics of Organizations" in
1978 Environments and Organizations, 29-50, ed. Marshall Meyer. San Francisco: Jossey-Bass.

Pfeffer, Jeffrey and Gerald Salancik. The External Control of
1978 Organizations. New York: Harper and Row.

Pugh, D. S., D. J. Hickson and C. R. Hinings. "An Empirical
1969 Taxonomy of Structures of Work Organizations," Administrative Science Quarterly, 14 (March 1969), 115-126.

Pugh, D. S., D. J. Hickson, C. R. Hinings and C. Turner.
1968 "Dimensions of Organizational Structure," Administrative Science Quarterly, 13 (June 1968), 65-91.

Rowan, Brian. Bureaucratization in the Institutional Environ-
1977 ment. Unpublished doctoral dissertation, Stanford University.

Rushing, William A. "Organizational Size and Administration,"
1966 Pacific Sociological Review, 9 (Autumn 1966), 100-108.

Scott, W. Richard. "Field Methods in the Study of Organizations"
1965 in Handbook of Organizations, 261-304, ed. James G. March. Chicago: Rand McNally.

_____. "Organizational Structure," Annual Review of Sociology,
1975 1, 1-20.

_____. Organizations: Rational, Natural and Open Systems.
1981 Englewood Cliffs, N. J.: Prentice-Hall, Inc.

Sproull, Lee S. "Managerial Attention in New Education Programs"
1976 a paper presented at the Conference on Educational Organizations as Loosely-Coupled Systems, Palo Alto, California.

Stackhouse, E. Ann. "The Effect of Environment and Technology on
1978 Structure and Coordination in High Schools" a paper presented at the Annual Meetings of the American Educational Research Association, Toronto.

Staw, Barry. "Attribution of the Causes of Performnance,"
1975 Organizational Behavior and Human Performance, 13, 414-432.

Terreberry, Shirley. "The Evolution of Organizational Environ-
1968 ments," Administrative Science Quarterly, 12 (March 1968), 590-613.

Thompson, James D. Organizations in Action. New York: McGraw-
1967 Hill.

Thompson, June E., Sanford Dornbusch and W. Richard Scott.
1975 Failures of Communication in the Evaluation of Teachers by Principals. Stanford, California: School of Education (SCRDT).

Tyack, David. The One Best System. Cambridge, Mass.: Harvard
1974 University Press.

Tyack, David and Elizabeth Hansot. Social Movements and
1979 Professional Managers. Stanford, California: Institute for Research on Educational Finance and Governance, Stanford University.

Udy, Stanley. Work in Traditional and Modern Society. Englewood
1970 Cliffs, N. J.: Prentice-Hall, Inc.

Weber, Max. From Max Weber: Essays in Sociology. eds., Hans
1946 Gerth and C. Wright Mills. New York: Oxford University Press.

Weick, Karl. "Educational Organizations as Loosely-Coupled
1976 Systems," Administrative Science Quarterly, 21 (March 1976), 1-19.

Wirt, Frederick. "Does Control Follow the Dollar?" a paper
1978 presented at the Annual Meetings of the American Political Science Association, New York.

APPENDIX A

ORIGINAL QUESTIONNAIRE ITEMS

AND ITEM REFERENCES

1. INTEGRATIVE CENTRALIZATION

A. Extensiveness of State Regulations: Source is School Centralism Scores by State (Wirt 1978: 8).

B. Centralization of Text Selection:
Whether districts must select textbooks through state approval channels
0 - no provision mentioned
1 - district may select all books without state approval
2 - some state approval process must be observed
9 - missing data
Source: Lawyers' Committee (1974), coded by Abramowitz and Tenenbaum (1978).

C. Centralization of Curriculum Selection:
Selection of Curriculum
0 - no requirements
1 - district leeway within state guidelines
2 - some parts of curriculum determined by state and some district leeway within state guidelines
3 - curriculum determined by state independent agency
4 - curriculum determined by state executive agency
9 - missing data
(Ibid.).

D. Perceived Extent of State Regulations:
What state . . . regulations govern your activity in the following areas? (Check all that apply)
1 - adding a new academic course
1 - setting rules for student behavior
1 - determining course objectives
1 - setting conditions for early exits/graduations
1 - adopting a new school grading practice
1 - setting criteria for evaluating teacher performance
1 - setting criteria for evaluating principal performance
1 - allocating school budget funds among departments, teachers or activities
Coded 1=checked, 0=not checked; summed over 8 regulation areas; (Ibid., Question 35a).

E. Percent school funds from state sources:
Source: NCES (1977: 42, Table 10, col. 9); Estimated revenue for public elementary and secondary education from state sources; percentage of revenue receipts from state sources.

2. FRAGMENTARY CENTRALIZATION:

A. Number of School Special Fundings
Please check all federal or state programs from which your school or students receive funds or services
1 - federal Title I (ESEA)
1 - state compensatory education
1 - vocational education
1 - career education
1 - special education
1 - bilingual education
1 - assistance to Indochinese refugee children
1 - library programs
1 - Title IVc -- innovative programs (old Title III)
1 - free or reduced price lunch program
1 - student transportation
1 - ESAA (desegregation)
1 - other (please specify)
Coded 1=checked, 0=not checked; summed over 13 program types; note that only 2.9% checked "other". Source: Abramowitz and Tenenbaum (1978: Question 12).

B. Basic Skills Program in the School:
Which of the following programs does your school currently offer to students? (Check all that aapply)
1 - remedial basic skills instruction
Coded 1=checked, 0=not checked; (Ibid., Question 23i).

C. Job Placement Program in the School:
Which of the following programs does your school currently offer to students? (Check all that apply)
1 - job placement service
Coded as above; (Ibid.).

D. State Bilingual Program Per Pupil Funds:
Source: National Advisory Council (1977: 89, Table 13, col. 1); Funding Levels for Bilingual Education from Federal and State Appropriations by State; State 1975-76.

3. ELABORATION OF SCHOOL MACROTECHNICAL STRUCTURE

A. Variety of Course Offerings:
Which of the collowing courses are taught in your school? (Check all that apply)
1 - biology/BSCS biology
1 - chemistry/CBA chem study

1 - physics/PSSC physics
1 - French
1 - Latin
1 - Russian
1 - art
1 - auto mechanics
1 - wood or machine shop
1 - business education
1 - homemaking
1 - a sequential math series through grade 12
1 - calculus

Which of the following are taught as separate courses in your school? (Check all that apply)

1 - family life education/sex education
1 - values clarification/moral education
1 - career exploration
1 - ethnic studies
1 - women's studies
1 - consumer education
1 - environmental or ocean studies
1 - sociology, anthropology or psychology

Coded 1=checked, 0=not checked; summed over 21 course types; (Ibid., Questions 15 and 17).

B. Alternative Credit Options:

Some schools allow students to receive credit in a variety of ways. Which of the following programs are currently available to your 9th to 12th grade students for credit? (Check all that apply)

1 - night or adult school
1 - college-level courses given at your school
1 - college courses on a college/university campus
1 - credit by examination
1 - credit by contract
1 - independent study projects
1 - off-campus work experience/training
1 - community volunteer program
1 - travel
1 - correspondence courses
1 - other (please specify)

Coded as above; summed over 11 alternatives; note that only 2.7% checked "other"; (Ibid., Question 21).

C. Scheduling Alternatives:

Please note the length of your school's courses for which credit is granted by placing a "1" beside the dominant length and a "2" beside all others currently used.

1,2 - semester length
1,2 - quarter length
1,2 - trimester length
1,2 - mini courses

1,2 - 45-15 or other variation of year-round sched.
1,2 - other (please specify)
Please note the daily scheduling systems currently used in your school by placing a "1" beside the dominant system and "2" beside others currently operating
1,2 - traditional (e.g., 35-60 minute periods)
1,2 - modular (e.g., 10-30 minute periods)
1,2 - flexible or open (combination of timings to meet needs of classes)
1,2 - daily demand (student allocates own time)
1,2 - other (please specify)
Coded 1=checked 1 or 2, 0=not checked; summed over 12 possibilities; note that 10.9% answered "1" and 3.6% answered "2" on other in first half, while 1.7% answered "1" and 1.3% answered "2" in the second half; Mean was 1.55 for first and 1.27 for second; (Ibid., Questions 4 and 5).

D. Special Physical Facilities:
What types of facilities do your students or staff have access to regularly (on campus or elsewhere)? (Check all that apply)
1 - indoor lounge or commons for students
1 - career information center
1 - occupational training center
1 - media production facilities
1 - remedial reading or math lab
1 - subject area resource center(s) other than central library
1 - departmental offices
1 - teaching resource center for teachers' use
1 - child care or nursery school facility
1 - alternative school or alternative school program
Coded 1=checked, 0=not checked; summed over 10 types of facilities; sum added to:
During the 1976-77 school year, how many teachers at your school used open-space, flexible classrooms?
Coded 0=none, 1=other response (e. g. some percentage in open space); final sum of 11 facilities including open space classrooms; (Ibid., Questions 10 and 11).

4. ELABORATION OF SCHOOL ADMINISTRATIVE STRUCTURE

A. Number of Specialists:
Please indicate the number of your school's professional staff by entering . . . the number of persons employed
Specialists (e.g. special ed., resource teachers, media specialists, psychologists, etc.)
Coded: Actual number, 0=blank unless number of classroom teachers was blank, then 999=missing data; (Ibid., Question 58a).

B. Number of General Administrators
Please indicate the number of your school's professional staff by entering . . . the number of persons employed
Assistant Principals and Deans
Coded as above; (Ibid.).

C. Staff Decision Participation:
We are interested in determining who is usually involved in making decisions relating to certain school matters. For each matter listed across, please check those who are usually involved
1 - teacher selection
1 - adding a new academic course
1 - adopting rules for student behavior
1 - determining course objectives
1 - evaluating the school's grading practices
1 - formulating school goals
1 - developing a budget for your school
Coded 1=checked, 0=not checked; summed for the following groups of participants; assistant administrators or subunit heads, guidance counselors, department head(s), teachers as individuals; Coded 99=missing data if matrix, including principal, was blank; (Ibid., Question 40).

D. Number of Regular School Administrative Meetings:
How frequently are the following school-level meetings held?
- regular faculty meetings
- English department meetings
- math department meetings
- inter-departmental meetings (exclude regular faculty meetings)
- department head meetings
- administrative staff meetings

Coded 1=once a month or more frequent timing checked, 0=several times a year, once a year, not at all or not applicable checked; Coded 99=missing data if entire matrix was blank; (Ibid., Question 28).

5. CONTROL VARIABLES

A. Logsize
How many students were enrolled in your school on October 1, 1976 for the 1976-77 school year?
Natural log taken of the figure coded; (Ibid., Question 1).

B. Location in West:
Coded 1 if school is in; WA, OR, CA, ID, NV, MT, WY, CO, UT, AZ or NM; Other State=0; (Ibid.).

C. Location in East:
Coded 1 if school located in; ME, VT, NH, MA, RI, NY, CT, PA, NJ, DE, MD, DC or WV; Other state=0; (Ibid.).

D. Rural School:
How would the area served by your school be described? (Check one)
Non-Metropolitan: (under 25,000 population and beyond metropolitan commute)
Coded 1=checked, 0=urban (150,000+), suburban adjacent to city) or medium city (25,000-149,000 and separate from large urban area) checked; (Ibid., Question 55).

E. District Contacts:
How frequently do you meet with the following district-level people to discuss school management or programs of instruction? (Check appropriate box for each person or group)
- superintendent
- central office budget specialists
- central office curriculum specialists
- area or regional administrators
- principals of other schools
- board advisory groups

Coded 1=once a month or more frequent timing checked; 0=several times a year, once a year, not at all or not applicable checked; summed across 6 types of district personnel; coded 9=missing data if entire matrix blank; (Ibid., Question 27).

TABLE 5: APPENDIX B

SIMPLE CORRELATION COEFFICIENTS

Variables Named as Indicated in Appendix A

	Integrative Centralization					Fragmentary Centralization			
	1a.	1b.	1c.	1d.	1e.	2a.	2b.	2c.	2d.
Integrative Centralization									
1a.	1.0000								
1b.	0.0350	1.0000							
1c.	0.0808*	-0.4167**	1.0000						
1d.	0.1909**	-0.0198	0.0944**	1.0000					
1e.	0.3881**	0.3856**	0.1845**	0.1435**	1.0000				
Fragmentary Centralization									
2a.	-0.0073	0.0250	0.0203	0.0812*	0.0657*	1.0000	0.0828*	0.1233**	0.0245
2b.	0.0273	-0.1135**	0.0601	0.0568	-0.0764*	0.0328*	1.0000	0.1854**	0.0829*
2c.	0.0175	-0.0408	0.0038	0.0409	-0.0058**	0.1233**	0.1854**	1.0000	0.0011
2d.	-0.2693**	-0.0334	-0.1415**	-0.0817*	0.0178	0.0245	0.0829*	0.0011	1.0000
Macrotechnical Structure									
3a.	-0.0050	-0.1879**	0.0514	-0.0283	-0.1646**	0.1494**	0.2739**	0.2694**	-0.0044
3b.	-0.0192	0.0154	-0.0220	0.0622	-0.1147**	0.1444**	0.2488**	0.2494**	0.1849**
3c.	-0.0012	-0.1724**	0.0842*	-0.0089	-0.1250**	0.0696*	0.0728*	0.0871**	-0.0015
3d.	0.0040	0.0281	-0.0296	0.0462	-0.0434	0.1908**	0.2680**	0.2058**	0.0828*
Administrative Structure									
4a.	-0.0422	-0.0745*	0.0596	0.0275	-0.0771*	0.1867**	0.2021**	0.2331**	0.1023**
4b.	0.0227	-0.0254	0.0207	0.0070	-0.0551	0.1176**	0.1473**	0.2273**	0.0861**
4c.	0.0517	-0.1378**	0.0791*	0.2163**	-0.0671*	0.1904**	0.2280**	0.2036**	0.0447
4d.	0.0052	-0.1284**	0.0967**	0.0560	-0.0474	0.1368**	0.2059**	0.1941**	0.0872**
Control Variables									
DISTRICT	0.0493	-0.0100	-0.0328	0.0152	-0.0376	0.1177**	0.0876**	0.0915**	0.0343
LOGSIZE	0.0792*	-0.0478	0.0994**	0.0531	-0.0244	0.1913**	0.1711**	0.2520**	0.0084
EAST	-0.1441**	-0.7454**	0.4605**	-0.0002	-0.1853**	-0.0228	0.1201**	0.0668**	0.0372
MIDWEST	-0.0418	0.2617**	-0.3409**	-0.1413**	-0.2789**	-0.0331	-0.1552**	-0.0229	-0.2156**
SOUTH	0.0543	0.3314**	0.0462	0.1220**	0.4140**	0.0593	-0.0999**	-0.0605	-0.0914**
WEST	0.1567**	0.1729**	-0.1543**	0.0524	0.1110**	0.0029	0.1896**	-0.0062	0.3185**
URBAN	0.0098	0.0430	0.0050	0.0073	0.0209	0.0373	0.0377**	0.1499**	0.0379
SUBURBAN	0.0326	-0.0345	0.0184	0.0298	-0.0814*	-0.0146	0.0753*	0.0910**	0.0284
RURAL	-0.0492	-0.0079	-0.0063	-0.0387	0.0334	-0.0359	-0.1384**	-0.1948**	-0.0569

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TABLE 5 (Continued)

	Macrotechnical Structure				Administrative Structure			
	3a	3b	3c	3d	4a	4b	4c	4d
Macrotechnical Structure								
3a	1.0000							
3b	0.4247**	1.0000						
3c	0.2711**	0.2233**	1.0000					
3d	0.3697**	0.3925**	0.2061**	1.0000				
Administrative Structure								
4a	0.3656**	0.2963**	0.1329**	0.3759**	1.0000			
4b	0.3651**	0.2895**	0.1013**	0.3578**	0.6814**	1.0000		
4c	0.3750**	0.3631**	0.2420**	0.2914**	0.3207**	0.2851**	1.0000	
4d	0.4104**	0.2858**	0.1951**	0.3451**	0.4026**	0.3946**	0.4038**	1.0000
Control Variables								
DISTRICT	0.1960**	0.1836**	0.1358**	0.1452**	0.1352**	0.0938**	0.1610**	0.2529**
LOGSIZE	0.5305**	0.3567**	0.1665**	0.4003**	0.5975**	0.6627**	0.4434**	0.5045**
EAST	0.2419**	0.0287	0.2085**	0.0226	0.1142**	0.0802*	0.1721**	0.1770**
MIDWEST	0.0128	-0.0303	-0.0434	-0.0513	-0.0873**	-0.1405**	-0.1353**	-0.1944**
SOUTH	-0.3121**	-0.2855**	-0.1533**	-0.0604	-0.0471	-0.0019	-0.1384**	-0.0497
WEST	0.0419	0.3078**	-0.0183	0.1012**	0.0274	0.0829*	0.1173**	0.0889**
URBAN	0.1887**	0.1234**	-0.0095	0.1595**	0.2929**	0.3556**	0.1121**	0.2373**
SUBURBAN	0.2133**	0.2438**	0.0900**	0.1475**	0.1933**	0.1819**	0.2004**	0.1880**
RURAL	-0.3227**	-0.3094**	-0.0618	-0.2586**	-0.4000**	-0.4306**	-0.2597**	-0.3501**

	Control Variables							
	District	Size	East	Midwest	South	West	Urban	Suburban	Rural
Control Variables									
DISTRICT	1.0000								
LOGSIZE	0.1319**	1.0000							
EAST	0.0036	0.1842**	1.0000						
MIDWEST	-0.0433	-0.1404**	-0.4256**	1.0000					
SOUTH	-0.0837*	-0.0148	-0.3119**	-0.3763**	1.0000				
WEST	0.1378**	-0.0215	-0.2819**	-0.3401**	-0.2492**	1.0000			
URBAN	-0.0330	0.3568**	-0.0167	-0.0911**	0.0369	0.0911**	1.0000		
SUBURBAN	0.0762*	0.2863**	0.0664*	0.0251	-0.1012**	0.0016	-0.3106**	1.0000	
RURAL	-0.0428	-0.5346**	-0.0363	0.0577	0.0528	-0.0055*	-0.5134**	-0.6258**	1.0000

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